Heraeus AMLOY

AMORPHOUS ALLOYS
AMLOY-ZR02

MATERIAL PROPERTIES

- High strength combined with excellent elasticity
- High surface quality
- High hardness and low abrasion
- High corrosion resistance
- Biocompatibility
- Isotropic behaviour

CHEMICAL COMPOSITION

Element	Concentration (wt%)
Zr	balance
Cu	16
Ni	12
Al	4
Ti	3

INDUSTRIES & APPLICATIONS

- Aerospace
- Consumer Electronics
- Industrial
- Lifestyle
- Medical Technologies
- Robotics
- Sensors
- Tool Inserts

PHYSICAL PROPERTIES

Properties	Typical Value
Density (g/cm^3)	6.65
Liquidus temperature (°C)	830
Solidus temperature (°C)	781
Glass transition temperature T_g (°C)	403
Crystallization temperature T_x (°C)	469
Crystallization enthalpy ΔH (J/g)	- 47
Young‘s modulus (GPa)	89
Poisson‘s ratio	0.37
Bending yield strength (GPa)	1.6
Tensile yield strength (GPa)	1.7
Compressive yield strength (GPa)	2.3
Vickers hardness (HV5)	540
Electrical conductivity (% IACS)	~ 1
Thermal conductivity (W/mK)	~ 2.5
Thermal expansion coefficient (1/K)	10 - 12 * 10^{-6}
Specific heat capacity (J/kgK)	250 - 350

PROCESSING TECHNOLOGIES

Additive Manufacturing:

The expanded design freedom of amorphous metals through 3D printing enables weight-reduced components

Injection Molding:

An automated 24/7 production process, excellent surface quality with an average roughness value (Ra) of 0.05 µm and low shrinkage of less than 0.5% are realised

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